

# THE WORLD BELOW 400 GHz

The Periodical Newsletter of the  
WAIKATO VHF GROUP Inc.,  
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NZART  
BRANCH 81

[www.zl1is.info](http://www.zl1is.info)

## September 2012 Issue

### WAIKATO VHF GROUP EXECUTIVE

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Committee	Neill Ellis	ZL1TAJ	07 576 1999
Committee	Kevin Murphy	ZL1UJG	07 847 0041
Editor	Kevin Murphy	ZL1UJG	07 847 0041

### General Meeting September 2012

A General Meeting of the Waikato VHF Group will be held on  
Sunday, 9th September, 2012 at 1:30pm.  
The venue will be the Branch 12 Clubrooms, 88 Seddon Rd, Hamilton.

It will be a combined Branch 12 & Branch 81 meeting.

Paul Godolphin, ZL4AX, from Pukekohe,  
will be speaking on the History and Basics of Packet Operation,  
along with a demonstration of its use.

More details at - [www.zl1is.info](http://www.zl1is.info)

Non members and visitors welcome.

# Membership of the Waikato VHF Group

The Waikato VHF Group was formed in 1963 by an enthusiastic group of Amateur Radio operators, and since then has continued to follow our objectives of fostering technology and higher frequency operation, and to establish and operate repeaters in the wider Waikato and Bay of Plenty area.

Over the years since inception, the Group has established a number of repeaters, and operated these for the wider community. During the years some sites have come and gone, providing different types of service as needs varied. In recent times we reached a major upheaval when we became aware of a forthcoming massive increase in charges at our flagship repeater site of Te Aroha. This was closely followed by the failure of the site antenna with astronomical replacement costs, and this, coupled with the realisation that the high interfering RF levels at that site are forever increasing (making the continued operation of a high performance repeater there almost impossible), drove us to commence a new project.

Our new 'WaiPlenty' repeater network ( [www.zl1is.info/waiplenty.html](http://www.zl1is.info/waiplenty.html) ) is now well under way to completion, with two linked repeaters operating, one nearly ready for service, and one further in planning. This is already giving excellent district-wide coverage, and results in a technology refresh that will leave future members with modern, easy to maintain equipment in place.

During recent years our Group has suffered the same as most nation-wide Amateur Radio clubs, (and indeed most community societies), from an aging and declining membership. While our numbers continue to be sufficient to operate as a club, our improved network has resulted in a large increase in the number of annual radio licenses we have to pay, and while site negotiations have been very successful at keeping our annual site occupation costs to a bare minimum, it is probable this will not continue for ever. Our new network of course occupies more sites than we have had in the past too, so routine site costs are certain to increase.

So our Group is continuing to provide high performance repeater networks, but with a smaller membership and with higher routine annual costs. Even the most enthusiastic group of hobbyists cannot sustain a trend like this for ever, so we need to increase our membership base to ensure the continued provision of our objectives.

The Waikato VHF Group is proud to be Branch 81 of our National association, NZART. We do welcome amateur operators who are members of NZART and who wish to place their branch affiliation with us, but we recognise there are a good number of other branches providing for the social and local organisational needs of our hobby in the towns and cities around our district. We believe the role of our Group is to provide wider area social interaction, foster technology, and operate the repeater network, so we encourage amateurs to join their local Branch, but to join our Group also. Those who take up this "dual membership" could see our subscription as just a donation for the provision of a reliable, wide-spread network of repeaters, but it is much more than that. By joining the Waikato VHF Group Inc, you have a vote! You get to select the executive, appoint the officers, approve the strategic direction of our organisation, review and approve the finances. You have direct influence on where we move to in the support of technology and repeaters, you are much more than just someone sharing the funding.

This article is prepared for our Group newsletter, so I realise most who read it will already be willing members and supporters, I therefore ask you to talk this over with your friends, talk it over positively on the air, mention that we are seeking more members to allow our organisation to continue to provide strong support. We need more members, we need them now, to allow us to achieve our objectives, and to continue our proud service to the community.

To join our team you can send a cheque or pay electronically - there are details on our web page at [www.zl1is.info/join.html](http://www.zl1is.info/join.html).

For more information on what we have achieved, and where we are going, have a browse through our web page on [www.zl1is.info](http://www.zl1is.info)

Your executive looks forward to you and your friends all joining us to provide a strong Group on-going into the future.

73 to all

Alan Wallace, ZL1AMW, President

## 2M REPEATER NETWORK

Installation and commissioning of our Maungakawa '5575 repeater is now very close. As the third repeater in our 2-metre linked network, the Waikato VHF Group acknowledges the contribution of various companies, organisations and individuals towards bringing this latest stage to fruition:

- **The Lion Foundation** for their grant of \$5000 to partially fund purchase of new radio equipment for Maungakawa,
- David **ZL1DGK** and Gavin **ZL1GWP** for preparing applications to different organisations for funding,
- **TeamTalk Limited** for providing rack space and facilitating access to antenna plant at Te Uku (for '5675 and the three-way linking node) plus Maungakawa for this latest extension,
- **Icom New Zealand** for ongoing support of our strategic decision made at the outset of this project to use new equipment wherever possible. All repeater and link radios deployed in this network to date have been supplied through Icom NZ,
- **FMTAG**, and in particular Doug **ZL2TAR** for organising the radio licenses (eight specifically for this network so far),
- Leith **ZL1BCJ** and Russell **ZL1RWR** for supplying additional ancillary components critical to these installations, plus Kevin **ZL1UJG**, Tom **ZL1THG**, Neill **ZL1TAJ** and Alan **ZL1AMW** for their technical support,
- Ian **ZL1TAT** for network design and on site implementation.

Development of this repeater network (refer to diagram on our web site at [www.zl1is.info/waiplenty.html](http://www.zl1is.info/waiplenty.html)) was prompted by our equipment needing to vacate the Te Aroha site. Over time, that move is delivering more extensive coverage than originally enjoyed - refer map at [www.zl1is.info/inlp.html](http://www.zl1is.info/inlp.html), plus now facilitates setting up different network configurations for specific events supported by amateur radio (rallies etc.). Although it's our most expensive undertaking ever, remaining at Te Aroha was not an option if our Group was to remain solvent. In bringing this project together, we acknowledge particular contributions by those listed above. Your use of those repeaters makes their effort worthwhile; however, it is annual subscriptions and sponsorships paid to the Waikato VHF Group which will keep these facilities on the air.

## General

At the Hamilton Amateur Radio Club Market day several weeks ago, a VHF Group table was attended by Tom ZL1THG and Kevin ZL1UJG. Sales on the day were about \$270, and an additional \$80 was made following a sale of another item during the following week. Thanks to those members who donated any items, and also bought any items off the table.

A 1296 MHz transverter and IC202 has been returned off loan. Following retesting it will be available for loan, for those who wish to try the band. 1296 MHz activity is primarily during contests, however skeds could be made via either the Yahoo ZLVHF contest reflector, or the VKlogger. Given the right conditions, contacts to VK during summer tropo enhancements are possible...

The scribe has been operating on WSPR (digital mode) on HF using his 5 watt Flexradio 1500 (A 5 watt SDR transceiver) [www.flex-radio.com](http://www.flex-radio.com) With a few watts (2 watts) and only Trident mobile HF whips and 11m CB whip

in a stealth location (ie hidden), the scribes signal has been seen throughout the world. Even on what seems a dead 10m band, the signal seems to get through to the USA during the middle of the day.

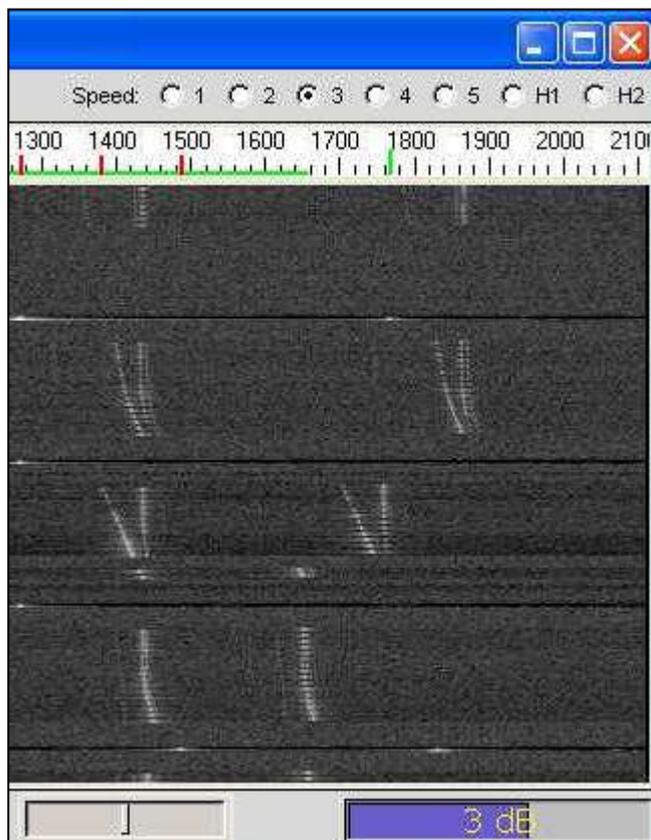
The Flexradio 1500 has coverage to 6m, but many people use the equipment for VHF and Microwave as an IF, due to its many features. Using the transverter port of the Flexradio 1500 it only generates 1mW maximum, ideal for transverter driving. The scribe has an old Microwave Modules MMT144/28 transverter from the 70-80's period. This together with a Tono 70 watt amplifier is used on 2M SSB and digital modes.

I set the equipment up for a digital contact with Stephen ZL1TPH, several days ago. The mode was JT65C, from the K1JT WSJT suite of software. Rather than run higher power, contacts were made at 4 to 5 watts at both ends of the 155 km path.

I heard Stephen's signal easily, and decoding was perfect, and the contact was over after a few minutes. I saw drift during reception, and thought it was Stephens setup. Then he said I was drifting... After further investigation it was confirmed it was my transverter. The 1500 is locked to a rubidium reference

The stability requirements now, of a few Hz during a tx cycle of 30 seconds to 2 minutes is quite difficult. I am working on improving stability. Even though the crystal is warmed by a little heater, there are effects such as the PA generating extra heat, which means the crystal changes frequency as the inside of the enclosure warms up... A work in progress

On the traces shown right, one can also see multiple signals, veering off at angles. This is almost certainly due to aircraft causing Doppler on the transmitted signals. Off course the "banana" shaped signal is my receiver drifting back from its previous TX cycle. The TX cycle is only 30 seconds .



With the signal processing, one is able to decode signals buried in the noise of a typical SSB bandwidth. Signals down to ~ -30 dB below the noise, can be decoded given optimum conditions. The computer is looking at only a few Hz bandwidth, while our ears hear the noise over SSB bandwidth (2.4 kHz)

Another mode in WSJT is FSK441 which is suitable for meteor scatter contacts. There is often activity on the bottom end of 2m, on Saturday and Sunday mornings. [www.vklogger.com](http://www.vklogger.com) The scribe has decoded some partial messages and is looking at doing some further experiments.

## QSL CARDS FOR COLLECTION

Sutton Burtenshaw, QSL Manager for Hamilton Branch 12, has the following QSL Cards for those callsigns listed below. Cards may be uplifted at a Hamilton Branch General Meeting which is held at 88 Seddon Road Hamilton on the third Wednesday of the month or from my (ZL4QJ) callbook qth by first phoning Hamilton (07) 8563832.

ZL1ADI ZL1ALH ZL1ALT ZL1ARD ZL1BCZ ZL1BGS ZL1BH ZL1BMA ZL1BMS ZL1BO ZL1BPI ZL1BSF  
ZL1BWQ ZL1BYH ZL1CA ZL1CAH ZL1CDJ ZL1CLE ZL1DG ZL1DJH ZL1GK ZL1IO ZL1IR ZL1JPS ZL1JZ  
ZL1KLP ZL1OJ ZL1RA ZL1RGM ZL1RN or RO ZL1RT ZL1SE ZL1ST ZL1TC ZL1UFJ ZL1UV ZL1VO ZL1WT.

73, Sutton ZL4QJ, QSL Manager Hamilton Branch 12.